54 LONG-TERM USE OF "LOW NICOTINE YIELD" CIGARETTES*

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This study examined the long-term use of cigarettes with reduced smoke yields of tar, nicotine and carbon monoxide. Participants for the study came from a heterogeneous population of volunteers (1025 men and 807 women) recruited from blood drives in Bergen County, N.J., between 1983 and 1986. A blood sample was obtained from each subject and a questionnaire was administered on smoking behavior. Blood samples were analyzed for nicotine and cotinine by radioimmunoassay (RIA) and for thiocyanate (SCN^-) and carboxyhemoglobin (COHb) by established analytical procedures.

Differences in the relative blood concentrations of tobacco smoke markers were not evident between the sexes when the data were normalized for daily nicotine availability. Comparison of nicotine, cotinine and gas phase constituents between subjects who smoked low-yield and high-yield cigarettes revealed that those persons who had switched to the low-yield products during their smoking years had levels of smoke metabolites which were equivalent to those found in users of high-yield products. A variety of smoking behaviors including increases in cigarettes smoked per day, depth of inhalation and smoking to a shorter butt length could contribute to these levels. Survey data collected with the blood sample queried such changes in smoking behaviors with changing to these low-yield products.

Finally, smokers who had continuously smoked low-yield cigarettes were found to absorb similar levels of nicotine as did smokers who used high-yield products. These findings suggest that smokers might titrate nicotine in a fairly constant manner despite the reported tar/nicotine yield of the product. In theory, while reduction of the tar and nicotine components in cigarette smoke could reduce the incidence of tobacco related diseases, mechanisms of compensation and possibly nicotine titration can result in higher circulating levels of tobacco toxins than would be expected to be found with use of low-yield products.

* For this study, we regarded low nicotine/tar cigarettes as those cigarettes that deliver less than 0.7 g of nicotine and less than 10 mg of "tar" under standardized FTC machine smoking conditions.

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